

Attorney Docket No. 5729.0015-00

a damper provided between said top ring drive shaft and a stationary member supporting said top ring drive shaft to dampen said top ring drive shaft.

23. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable having an abrasive cloth at an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a plurality of biasing members rigidly attached to the periphery of said top ring;

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and

a damper provided between said top ring drive shaft and a stationary member supporting said top ring drive shaft to dampen said top ring drive shaft.

24. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable having an abrasive cloth at an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a plurality of biasing members rigidly attached to said top ring and positioned radially with respect to said drive shaft for biasing the periphery of said top ring; and

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a damper provided between said top ring drive shaft and a stationary member supporting said top ring drive shaft to dampen said top ring drive shaft.

25. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable having an abrasive cloth at an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing interposed between said top ring and said top ring drive shaft for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a plurality of biasing means rigidly attached to said top ring and positioned radially with respect to said drive shaft for biasing the periphery of said top ring; and

a damper provided between said top ring drive shaft and a stationary member supporting said top ring drive shaft to dampen said top ring drive shaft.

27. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing interposed between said top ring and said top ring drive shaft, said bearing allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

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D2 Conclusion

a torque transmitter comprising a plurality of torque transmitting members provided at a substantially lower part of said top ring drive shaft and extending radially outwardly, said torque transmitting members transmitting torque from said top ring drive shaft to said top ring at locations spaced from said top ring drive shaft while permitting said top ring to tilt relative to said top ring drive shaft; and

a damper provided between said top ring drive shaft and a stationary member for supporting said top ring drive shaft, to dampen said top ring drive shaft.

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30. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing interposed between said top ring and said top ring drive shaft for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a torque transmitter for transmitting torque from said top ring drive shaft to said top ring while permitting said top ring to tilt relative to said top ring drive shaft, said torque transmitter comprising a plurality of torque transmitting members provided at a substantially lower part of said top ring drive shaft and extending radially outwardly, said torque transmitting members transmitting torque at locations spaced from said top ring drive shaft; and

a damper provided between said top ring drive shaft and a stationary member for supporting said top ring drive shaft to dampen said top ring drive shaft.

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36. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

a top ring drive shaft coupled to said top ring;

a bearing interposed between said top ring and said top ring drive shaft, said bearing allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a damper provided between said top ring drive shaft and a stationary member for supporting said top ring drive shaft to dampen said top ring drive shaft; and

a pressure adjuster provided between said bearing and said top ring for adjusting a pressure distribution of a lower surface of said top ring, said pressure adjuster including an annular portion which contacts an upper surface of said top ring.

39. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring for supporting the workpiece to be polished, said top ring having an upper top ring member connected to a lower top ring member, said lower top ring member having a plurality of suction holes therethrough connectable to a vacuum source, whereby the workpiece is attractable to a lower surface of said lower top ring member under a vacuum developed by said vacuum source;

a top ring drive shaft;

a bearing interposed between said top ring and said top ring drive shaft for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable; and

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a torque transmitter for transmitting torque from said top ring drive shaft to said upper top ring member while permitting said top ring to tilt relative to said top ring drive shaft, said torque transmitter including a damper for inhibiting the transmission of vibrations.

40. (Amended) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable with an abrasive cloth mounted on an upper surface thereof;

a top ring for supporting the workpiece to be polished, said top ring having an upper top ring member connected to a lower top ring member, said lower top ring member having a plurality of suction holes therethrough connectable to a vacuum source, whereby the workpiece is attractable to a lower surface of said lower top ring member under a vacuum developed by said vacuum source;

a top ring drive shaft;

a bearing interposed between said top ring and said top ring drive shaft for allowing said top ring to tilt upon changes in the inclination of said upper surface of said turntable;

a plurality of biasing members rigidly attached to said top ring; and

a damper provided between said top ring drive shaft and a stationary member supporting said top ring drive shaft to dampen said top ring drive shaft.

49. (New) A polishing apparatus for polishing a surface of a workpiece, comprising:

a turntable having an abrasive cloth at an upper surface thereof;

a top ring positioned above said turntable for supporting the workpiece to be polished and pressing the workpiece against said abrasive cloth;

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a top ring drive shaft coupled to said top ring;
a bearing for allowing said top ring to tilt upon changes in the inclination of said
upper surface of said turntable; and
a damper provided between said top ring drive shaft and a stationary member
supporting said top ring drive shaft to dampen said top ring drive shaft.

50. (New) The polishing apparatus according to claim 49, wherein said top
ring includes an upper top ring member connected to a lower top ring member, said
lower top ring member having a plurality of suction holes therethrough connectable to a
vacuum source, whereby the workpiece is attractable to a lower surface of said lower
top ring member under a vacuum developed by said vacuum source, wherein said
upper top ring member includes an annular portion which contacts an upper surface of
said lower top ring member.

51. (New) The polishing apparatus according to claim 50, further comprising a
torque transmitter for transmitting torque from said top ring drive shaft to said upper top
ring member while permitting said top ring to tilt relative to said top ring drive shaft.

52. (New) The polishing apparatus according to claim 49, further comprising a
transferring device for transferring the workpiece from and to said top ring, said
transferring device having a holder for holding the workpiece, said holder being elevated
when the workpiece is transferred from and to said top ring, wherein said holder

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comprises a support member having a suction hole connected to a vacuum source for attracting the workpiece to said support member.

53. (New) The polishing apparatus according to claim 52, further comprising a washing unit to wash the workpiece after the workpiece is received by said transferring device.

54. (New) The polishing apparatus according to claim 39, 40, or 50, wherein said top ring drive shaft and said upper top ring member have vacuum passages therein connected to one another and connectable to said vacuum source, and wherein said vacuum passage in said upper top ring member is connected to the suction holes in said lower top ring member.

55. (New) The polishing apparatus according to claim 54, wherein said upper and lower top ring members are shaped and disposed so as to form a vacuum manifold therebetween, each of said suction holes in said lower top ring member and said vacuum passage in said upper top ring member opening into said manifold.

56. (New) A method of polishing a workpiece, comprising:
holding a workpiece by a top ring;
rotating said top ring with respect to a turntable;
polishing said workpiece by pressing said workpiece against said turntable by
said top ring;

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